

CO 2 Redgram - A New Strain with Early Maturity and Improved Plant Type

By

R. VEERASWAMY¹, P. RANGASAMY² and N. MOHAMED SHERIFF³

ABSTRACT

Attempts made to evolve a short duration and higher yielding variety of redgram (*Cajanus cajan* (L.) Mill. sp.) with compact plant type suitable for both rainfed and irrigated culture have resulted in the successful development of new strain CO2. It matures in 110 to 115 days. On an average, it is capable of yielding 1500 kg/ha under irrigation and 750 kg/ha under rainfed condition resulting in a per day productivity of 13.0 kg/ha and 6.2 kg/ha respectively. It is photoinsensitive adopting well for cultivation all round the year. With compact and erect plant body bearing terminal clusters and synchronisation of maturity, it is best suited for cultivation as a companion crop with groundnut. It is note worthy that this strain CO2 is fairly tolerant to *Fusarium* and *Rhizoctonia* wilt and root rot diseases under field condition.

INTRODUCTION

Redgram (*Cajanus cajan* (L.) Mill. sp.) is the most important pulse crop of Tamil Nadu and occupied an area of about 1,18,800 hectares with an annual production of about 46,280 tonnes of pulse grains (Anon 1975). As a result of earlier work CO1 redgram an improved variety maturing in 135 days was released. (Veeraswamy and Rathnaswamy 1972). Further attempts made at Tamil Nadu Agricultural University, Coimbatore to evolve still superior variety, shorter in duration and higher yielding than CO1 with an improved plant type suitable for rainfed and irrigated conditions have resulted in the release of CO2 redgram. The development of this new variety and its salient features are described below.

MATERIALS AND METHODS

Research project on evolution of short duration coupled with high

yielding strain of redgram suitable for both rainfed and irrigated culture was envisaged by the Department of Agricultural Botany, Tamil Nadu Agricultural University, Coimbatore from the year 1970 to 1974. By intensive screening of 1149 available germplasm types 12 short duration and compact plant types were isolated and their performance was studied in a preliminary yield trial. From among them three promising cultures viz., S31, S41 and S42 were further advanced to comparative yield trial along with CO1 standard. Critical yield trials were made at the Research station under rainfed conditions during 1973 early monsoon season (June-Sep.), 1973 late monsoon season (September-December) and 1973 winter season (December-March) as well as irrigated conditions in 1974 summer season. Simultaneously scattered block trials were conducted in farmers holdings in

1. Associate Professor, 2. Instructor and 3. Assistant Professor, Department of Agricultural Botany, Tamil Nadu Agricultural University, Coimbatore-641003.

and around Coimbatore district and selected locations of different districts of Tamil Nadu. Selection S42 with 115 days duration has performed very well in both Research station as well as in farmers holdings. It is a reselection from the type No. 4728 (Hyderabad) maintained in varietal collection at Pulses Breeding Station, Agricultural College and Research Institute, Coimbatore.

RESULTS AND DISCUSSION

The results of the yield trials at the Agricultural Research Station under rainfed condition is furnished in Table 1.

TABLE 1. Results of trials at the research station under rainfed condition.

Year of experiment	Average yield in Kg/ha	
	S42	CO1
Early Main season (1973)	972	850
Per cent on CO1	114	100
Late Main season 1973	1119	945
Per cent on CO1	118	100
Winter Season 1973	385	344
Per cent on CO1	112	100
Mean of 3 seasons	825	713
Per cent on CO1	116.0	100.0

It is observed that in all the three seasons S42 has registered consistently higher grain yield with an average hectare yield of 825 kg under dry conditions representing an increase of 16 per cent over CO1 standard strain.

The results of the trials conducted under irrigated conditions during summer 1974 is presented in Table 2.

TABLE 2. Trials at research station under irrigated condition.

Year of the experiment	Average yield in Kg/ha	
	S 42	CO 1
1974 Summer season	1,583	1,308
Per cent on CO1	123	100

The performance of S42 redgram at farmers holdings at rainfed and irrigated conditions is furnished in Table 3.

TABLE 3. Results of the trials on farmers holdings

Year of the experiment	Yield in Kg/ha	
	S42	CO1
Monsoon 1973 (Rainfed)		
Mean yield kg/ha	611	518
Per cent on CO1	116	100
Summer — 1974 (Irrigated)		
Mean yield in kg/ha	1406	1145
Per cent on CO1.	123	100

Under rain fed condition it has recorded 16 per cent higher grain yield than control with mean yield of 611 kg/ha. Under irrigated condition the mean grain yield was 1406 kg/ha with 23 per cent higher yield over CO1 redgram.

The economic attributes and overall performances of S42 redgram are furnished in Table 4. In terms of per day productivity 13.0 Kg/ha, and 6.2 kg/ha for S42 as against 9.1 Kg/ha and 4.6 kg/ha for CO1 under irrigated and rainfed condition respectively.

TABLE 4. Economic attributes and overall performance

Characters	S42	CO1
Yield in kg/ha (Irrigated)	1,494	1,227
Yield as per cent on CO1	122	100
Per day productivity in kg/ha (Irrigated)	13.0	9.1
Cost benefit ratio (irrigated)	1: 1.96	1: 1.62
Yield in kg/ha (Rainfed)	718	616
Yield as per cent on CO1	117	100
Per day productivity in kg/ha (rainfed)	6.2	4.6
Cost benefit ratio (rainfed)	1: 2.05	1: 1.79
Duration in days	115	135
Protein content per cent	19.3	17.4

S. 42 is earlier than CO1 by 20 days and mature in 115 days. It has bigger grains (100 grain wt. 9.0 g.) as compared to CO1 (100 grain wt. 7.2 g) and the dhal cooks well in 30 minutes. The cooked dhal is soft, pleasantly flavoured and tasty. It has a protein content of 19.3 per cent which is about 1.9 per cent higher than that of CO1.

The plants are short (90–100 cm) compact and erect have more populations per unit area about 70,400 plants per hectare with a spacing of 45 × 30 cm as compared to CO1 with 52,800 plants per hectare spaced at 60 × 30 cm. (Plate). The pods are born in terminal clusters. They are green in colour with purple streaks and turned brown on drying. Each pod on maturity is about 5.0 cm long and contains 3–4 seeds, copper brown in colour. The photo-insensitive S42 can be grown in all round the year but February–March and June–July are the optimum sowing seasons. The compact plant type and

its maturity 115 days render this variety as an ideal companion crop for mixed cropping with groundnut.



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